

IAEA Releases Annual Report on Energy, Electricity and Nuclear Power to 2050

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Authors: [Andrew McDougall](#), [Daniel Garton](#), [Richard Hill](#), [Kirsten Odynski](#), [Dipen Sabharwal QC](#)

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In September 2019, the International Atomic Energy Agency (“IAEA”) released its annual report on “Energy, Electricity and Nuclear Power Estimates For The Period Up To 2050.”¹ The report cites to various factors in the short-term that present challenges for the nuclear industry: the low price and increased supply of natural gas, the impact of subsidized renewable energy on energy prices, financial uncertainty, stagnant electricity demand in some regions, increased construction times and costs due to heightened safety requirements and challenges using advanced technologies, and the impact of the Fukushima accident. However, the report also cites to various factors that point to nuclear power playing an important role in the longer run: population growth and electricity demand in some regions, climate change and air pollution concerns, energy security and independence, and price volatility of other sources of power.

Nuclear power remains a very small source of energy in the world today. As set out in the IAEA report, at the end of 2018, around 70 percent of the world’s energy consumption was in the form of fossil fuels and only around 20 percent was in the form of electricity. The main sources of energy were oil (40 percent), electricity (19 percent), natural gas (15 percent), coal (13 percent), bioenergy and waste (ten percent), and heat and other (three percent). Within electricity as a source of energy, coal is the largest followed by natural gas, hydro, nuclear (which is ten percent of electricity production), wind, oil, bioenergy and waste, solar and geothermal.

Electricity production grew by almost four percent in 2018, while nuclear electricity production grew by 2.4 percent. World energy consumption is expected to increase 16 percent by 2030 and 38 percent by 2050, while electricity consumption is expected to increase at a faster rate. The share of electricity in energy consumption is expected to rise from 19 percent to 21 percent by 2030 and 26 percent by 2050. Depending

¹ INTERNATIONAL ATOMIC ENERGY AGENCY, Energy, Electricity and Nuclear Power Estimates for the Period up to 2050, Reference Data Series No. 1, IAEA, Vienna (2019), available at <https://www.iaea.org/publications/13591/energy-electricity-and-nuclear-power-estimates-for-the-period-up-to-2050>

on how nuclear power develops in the coming decades, the IAEA projects that the amount of electricity that will be produced by nuclear power will either increase from ten percent to 11 percent in 2030 and 2050 (high case) or reduce to eight percent in 2030 and six percent in 2050 (low case).

At the end of 2018, there were 450 nuclear power plants (NPPs) in the world, and an additional 55 NPPs were under construction. During 2018, seven NPPs were retired, nine new NPPs were connected to the grid, and construction began on five new NPPs. The countries with the most NPPs were the US (98), France (58), China (46), Japan (38), Russia (36), South Korea (24), India (22), Canada (19), the UK (15) and Ukraine (15). So, 371 or 82 percent of the world's 450 NPPs were in these ten countries, and over half of the world's NPPs were in just the first four countries: the US, France, China and Japan.

The most dependent country in the world on nuclear power for electricity production was France (72 percent), while Slovakia, Ukraine and Hungary were each over 50 percent. Sweden, Switzerland, Belgium, Slovenia, Bulgaria, the Czech Republic and Finland were each between 30 percent and 40 percent. However, China was only at four percent and India was only at two percent. In other words, nuclear power makes up only a tiny portion of electricity production in the two countries that make up almost half of the world's population.

More than half of the 450 NPPs in the world today are over 30 years old. The IAEA projects that the biggest potential for growth in nuclear power is in Asia, Africa, Latin America and Eastern Europe and that nuclear power will decline in the rest of Europe and will stay flat or decline in North America. According to the IAEA Deputy Director General Mikhail Chudakov, Head of the Department of Nuclear Energy: "Global electricity demand is expected to rise sharply in coming years as countries need more power for development. Without a significant increase in the deployment of nuclear power, it will be difficult for the world to secure sufficient energy to achieve sustainable development and to mitigate climate change."²

White & Case LLP
19, Place Vendôme
75001, Paris
France
T +33 1 55 04 15 15

White & Case LLP
5 Old Broad Street
EC2N 1DW, London
United Kingdom
T +44 20 7532 1000

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² See IAEA press release dated 10 September 2019, available at <https://www.iaea.org/newscenter/pressreleases/iaea-releases-new-projections-for-nuclear-power-through-2050>